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ABSTRACT

Research was initiated to investigate the concept of "network" as it related to the development of an occupational information system in Minnesota. Forty-eight users and producers of occupational information located in a number of Minnesota agencies were interviewed, with primary atention given to those agencies represented on the Minnesota Occupational Information Coordinating Committee. Individuals interviewed were selected to represent positions at all levels within each agency, as well as a diversity of job tasks, including the production of occupational information and use of such information for making guidance, placement, educational, or program planning decisions. Elements in the Minnesota network at all levels in each agency were identified and classified as users or producers of occupational information, or as both. The context and nature of the communication linkages between and among producers and users of occupational information were examined and existing formal and informal linkages between elements described. Facilitators and barriers to inter-organizational communication were identified, and recommendations were made concerning continued development of the Minnesota Occupational Information Network. (YLB)

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Minnesota's Occupational Information System:

Toward Improving the Network

By Donna L. Wielinski
Gen Olson
George H. Copa

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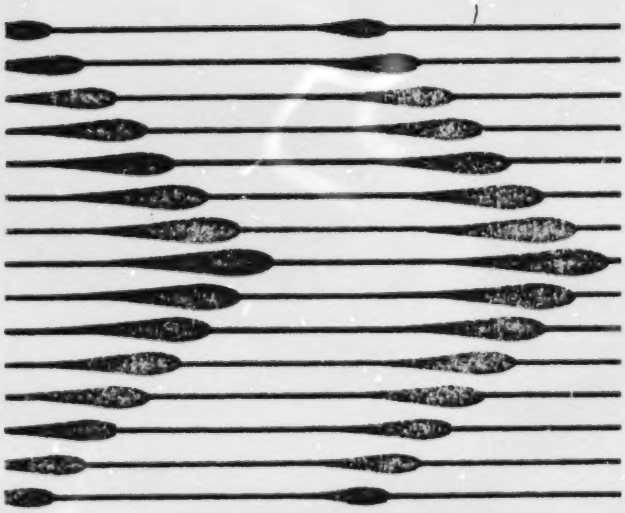

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October, 1981

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Preface

This report highlights one of the three major activities carried out by the Minnesota Research and Development Center for Vocational Education at the University of Minnesota in a project conducted under contract with the Minnesota Occupational Information Coordinating Committee (MOICC). All of the activities in the project were aimed at the further development and field testing of an Occupational Information System for Minnesota. The study reported here pursues the "network" as the type of system that presently exists and has potential for further development as the means by which occupational information can be sought and obtained for use in decision-making, particularly concerning educational program management and career counseling.

Principal investigator, George Copa and project director, Gen Olson defined the problem, determined the approach for conducting the study, gained approval for the program of work, and assisted in obtaining access to needed information and report writing. Donna Wielinski, chief author of this report, brought her background and experience in anthropological research to this endeavor, designing the specifics of the procedure, carrying through on that design and analyzing and intrepreting the findings.

Project staff wishes to express appreciation to the forty-eight study informants for their willingness to share both time and experiences for this effort. Special thanks is given to Marion Dobbert at the University of Minnesota for "sparking" the idea of doing a network analysis as a strategy for this study and for assisting in locating resource materials and giving advice in planning the study. We are especially grateful to the members of the Technical Advisory Committee to the MOICC for their advice and for opening many channels to the network. Our thanks, also, go to MOICC members and staff for providing initial access to the agencies represented in the network.

Abstract

This research was initiated to investigate the concept of "network" as it relates to the development of an Occupational Information System in Minnesota. Forty-eight users and producers of occupational information located in a number of Minnesota agencies were interviewed, with primary attention given to those agencies represented on the Minnesota Occupational Information Coordinating Committee. The individuals interviewed were selected on the basis of the positions they held in these agencies. The positions were selected to represent all levels within each agency, as well as a diversity of job tasks, including the production of occupational information and the use of such information for making guidance, placement, educational or program planning decisions. Using data gained from those interviewed, the elements in the Minnesota network at all levels in each of the agencies are identified and classified as users, producers, or as both users and producers of occupational information. Users are characterized by what type of decisions they make. The context and nature of the communication linkages between and among the producers and users of occupational information are also examined and the existing formal and informal linkages between elements described. Finally, the facilitators and barriers to inter-organizational communication are identified, and recommendations made concerning the continued development of the Minnesota Occupational Information Network.

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CHAPTER I

Background and Purpose

The initial charge to develop and implement an Occupational Information System (OIS) was delivered by Congress in the Vocational Education Title of the Education Amendments of 1976 (P.L. 94-482). The National Occupational Information Coordinating Committee (NOICC) was created by this mandate. Its primary purpose was to meet the occupational information needs of vocational education programs and employment and training programs at local, state, and national levels. This work was to be accomplished through State Occupational Information Coordinating Committees (SOICCs) authorized by the same legislation.

Over the next two years the concept was strengthened and the mission expanded in the Youth Employment and Demonstration Projects Act of 1977 (YEDPA) (P.L. 95-93), the Career Education Incentive Act (P.L. 95-207) and the Comprehensive Employment and Training Act Amendments of 1978 (CETA) (P.L. 95-524). Not only was the Occupational Information System (OIS) to serve local planners and administrators of CETA and vocational education programs and their administering agencies at state and federal levels, but also it was to consider the needs of unemployed youth, students, and other individuals seeking rehabilitation services and preparation for and assistance in obtaining employment. Thus, both the number and variety of people and the information needs that are encompassed by an acceptible OIS were increased. The legislation stated the purpose and created the mechanism for OIS development but did not dictate how it was to be done or what the system would look like when it was in place.

The NOICC, whose federal agency membership represented the major categories of occupational information producers and users, established policies to guide both their and state OIS development. Efforts were not to be directed toward the collection of data but rather to enhance the use of what was already being collected and to participate in making appropriate connections between information and the people needing the information.

Some underlying assumptions that could be drawn from this national policy are that: (1) Congress believed that systematic use of occupational information would lead to better plans, decisions, and actions than would occur without it, (2) that information produced by one agency for its purposes would be useful to another, and (3) that coordination and cooperation could result in more efficient use of resources and, perhaps, better occupational information available for those who need it.

The Minnesota Occupational Information Coordinating Committee was created by order of the Governor in 1978 followed by an interagency agreement establishing its membership, goals, and authority. The committee members are the heads of the Vocational Rehabilitation and Job Service Divisions and the

Minnesota Department of Education. Its goals, as summarized by MOICC staff, are:

-- Assess the information needs of users;

-- Promote the exchange and use of occupational data;

-- Reduce duplication of effort in data production and support its standardization;

-- Recommend new data collection and dissemination programs;

-- Promote the understanding of occupational information through work shops and other technical assistance efforts;

-- Encourage the provision of information necessary to vocational train ing programs.

A Technical Advisory Council (TAC) of twelve members, three appointed by each of the MOICC members, makes recommendations on activities supportive of and consistent with the stated goals.

Major activities completed have included: (1) conducting a survey to determine the needs of users as well as their current awareness and use of available occupational information, (2) developing a Guidebook of Occupational Information Sources, and (3) proposing an occupational information network design for MOICC based on study of the results of activities (1) and (2), review of NOICC materials relating to OIS development, and meetings with producers of occupational information.

The latter study conducted under contract by Educational Management Services, Inc., had as RECOMMENDATION NO. 1 - ADOPT THE NETWORK MODEL AS THE MOST EFFECTIVE APPROACH TO DEVELOPING AN OIS IN MINNESOTA. One major aspect of the purpose of the study reported here was to further develop the conceptual framework for Minnesota's Occupational Information System, the "network" being the type of system recommended as appropriate to Minnesota.

The current "in vogue" status of the term "network" and its application to a wide variety of contexts has caused some confusion as to its meaning. This has resulted in divergent perceptions of what form an occupational information network would take. The premise upon which this developmental activity is based was that the federal mandate stressed the information needs of people, thus the network is one that gives attention to both people and information.

The approach to the network project as presented in this report was to explore the concept of "network" for purposes of clarification and understanding and for building a rationale upon which the Minnesota Occupational Information Network could be further developed. The specific purposes of the network project were:

(1) to identify elements in the network at all levels and to classify them as users, producers, or user/producers of occupational information,

(2) to determine the existing formal and informal linkages between elements in the network, including the form and content of communications which constitute the linkages, and

(3) to identify facilitators and barriers to inter-organizational Communication both from relevant literature and the research activity itself.

The assumption is that determining what is can provide insights into what could be done to further develop the network and improve both the medium and the message, the communication and the information exchanged in that process.

CHAPTER II

The Network Concept

In the broadest sense a network is a number of individuals who are linked together. How individuals are linked, why specific links are present, and what effects such linkages have on individuals involved within networks depends on the particular field of study.

The concept of network has a number of applications and is presently used in more than a dozen fields including anthropology, engineering, communications, psychology, administrative sciences, geography, city planning and sociology. Within management theory, the network approach is used as a predictable procedure in planning. Flow charts are used showing the interdependence between activities and events to be accomplished within a given time frame (Archibald & Villoria, 1967). Educators use the network concept both as a management tool (Handy & Hussain, 1967) and as a strategy for the dissemination of information (Mitchell, 1970). Sociologists interested in interorganizational analysis use the network concept as a theoretical model in which organizational networks are viewed as fundamental units of analysis within the political economy (Benson, 1975). Those interested in communication and the dissemination of information use network analysis to examine the communication patterns within and between organizations, both to understand the flow of information (Sarason, 1977) and the nature of organizations (Rogers & Rogers, 1976).

It is this latter application which concerns this project as a step in the further development of an occupational information system in Minnesota which is thought of as a people network. In order to better understand why the network concept is an appropriate way to think about an occupational information system it is first useful to understand the structure and organizational principles of networks. That is the purpose of this chapter.

TYPES OF NETWORKS

Because it is impossible to look at total networks -- which are theoretically limitless as ultimately everyone in the whole world can be shown to have some connection, with each other, however remote -- it is necessary to focus on or emphasize particular aspects or features of networks for study. The focus can be an individual. That is to say, beginning with one individual and showing how he/she is linked to other individuals. This type of focus is usually referred to as an "individual" network (Figure 1).

Another type of network, one that interorganizational research have found especially useful (Turk, 1970), is the idea of a "mesh" network. A mesh network consists of individuals in a number of organizations which are linked together (Figure 2). A mesh network may be limited geographically or by a common

function. For example, the Minnesota occupational information network can be described as a mesh network whose members, located in several agencies, are linked together through a common function, (i.e. the production of, need for, and use of occupational information.)

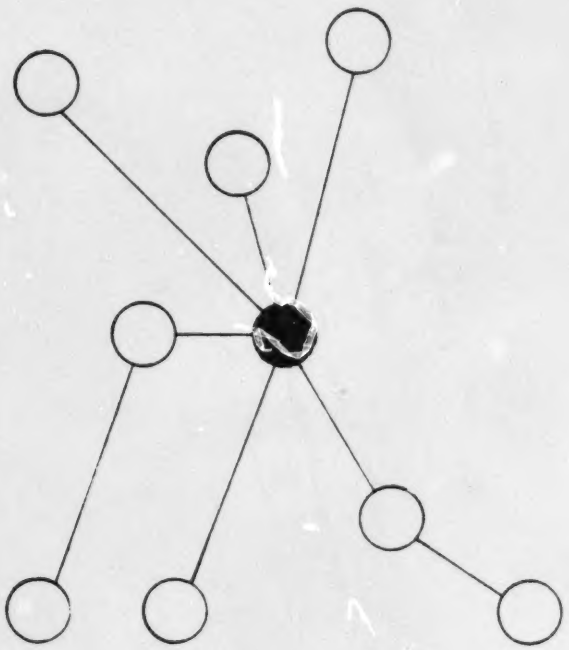

Figure 1. Individual network

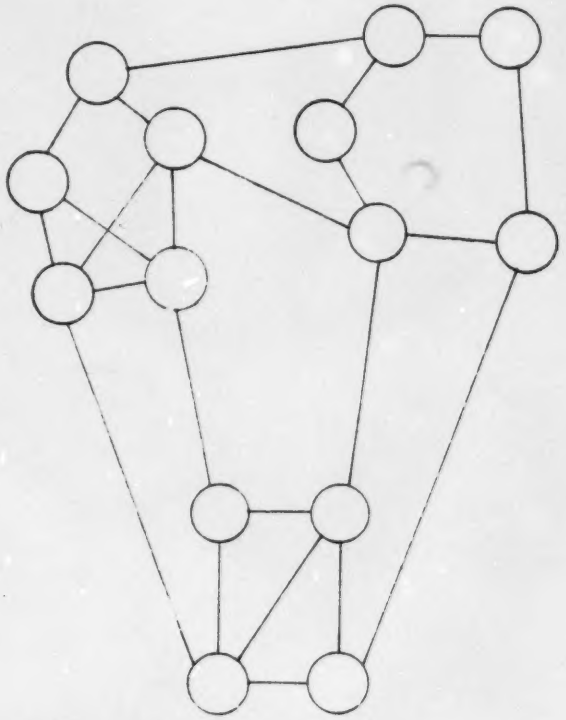

Figure 2. Mesh network

Besides being descriptive of interrelationships, the network concept can be used to understand: (1) how networks function for, influence and/or support individuals and (2) how innovation or information is diffused within or between organizations in the case of mesh networks whose members choose to interact around common interests.

Of particular importance is an increasing interest in and recognition of the role informal interpersonal contacts and relationships play in interorganizational functioning. For example, Craven and Wellman (1973) have suggested that formal organizational arrangements are too inflexible and cumbersome to carry out the complex, flexible coordination required in contemporary settings and claim that such formal arrangements are "always supplemented -- and often supplanted -- by informal interpersonal networks." Similarly, Schon (1971) noted that in agencies which tend to isolate themselves from other agencies, most inter-agency efforts fail and that informal networks of people are "often the chief means by which agencies can be coordinated." Somewhat along these same lines, J. Clyde Mitchell (1973) stressed that the persistence of common aims and interests among network participants eventually lead to the formation of commonly accepted rules and norms, a valuable facilitator to inter-agency cooperation.

Furthermore, as Burns and Stalker have observed (1961) at the beginning of the previous decade, the unstable and rapidly changing conditions of the contemporary work environment continually gives rise to fresh problems and unforseen requirements, and that formal hierarchies or organizational structures cannot be adequately responsive to the problems which such conditions generate. On the other hand, an informal network with and between organizations can take rapid advantage of opportunities when they occur, sidesteping difficulties created by hierarchical organizational structures.

One purpose of structure in an organization is to provide stability, regularity, and predictability. The existence of informal communication flows in and between organizations is evidence that the formal structure does not always completely predict communication behavior (Rogers & Rogers, 1976). Moreover, informal communication in an organization is always of importance whether or not the formal communication channels within and between agencies are functioning adequately. However, the less responsive the formal structure is to "problems" which arise, the more informal communication is likely to be found.

NETWORK ROLES

The existence of specialized communication roles such as liaisons and gatekeepers indicates that informal communication structures are present within and between organizations. Individual communication roles played by individuals in a communication network represent a special function necessary to the efficiency of network communication and facilitate information flow. A gatekeeper prevents information overload by filtering and screening messages (Figure 3); the liaison integrates and serves to link discrete sub-networks) or cliques) together; the opinion leader facilitates informal decision making in the network; and the cosmopolitan, who, because of involvement in a wide range of activities and dealings with a number of different organizations, helps to relate the communication network to its environment and provides a high degree of openness wherein new information and innovations can enter the network -- thus becoming gatekeeper to the network itself.

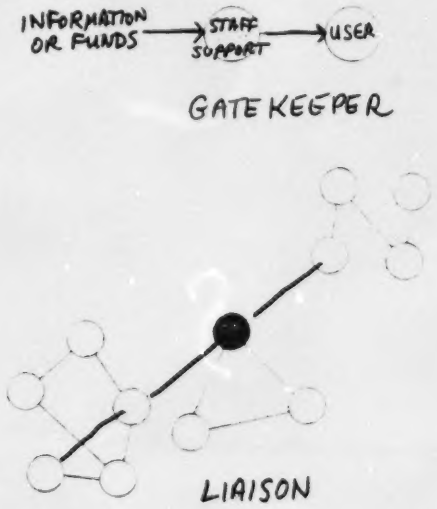

Figure 3. Two network roles

ADVANTAGES OF A NETWORK APPROACH

The term "network" can be considered the communication analogue to the sociological concept of group, but "network" is distinct from "group" in that it refers to a number of individuals who interact with each other in accordance with established patterns. Although networks can be measured sociometrically, they are otherwise not visually obvious. However, they are quite real (Nehnevasja, 1960).

The network approach is advantageous for several reasons. First, it is practical as well as theoretically desirable. In using the network concept the theoretical focus of attention is upon people who are inter-related rather than upon parts of a "system." The system concept focuses attention upon the structural and technological elements for analysis (Silverman 1971). In a systems approach, organizations are the units of analysis and, as such, are seen as systems within larger systems which are governed by an overall "rational" plan. Individual actions by persons within system organizations are assumed to be in accordance with system goals (Krupp, 1961). Unfortunately, from a practical view, these system assumptions have not proven valid for day to day decision-making.

A network approach and analysis offers distinct advantages for those interested in understanding contemporary social interactions and relationships between organizations. Network researchers are forced to deal with the complex reality of interrelationships in the real, day-to-day, world. In essence, it provides a potential means for developing a holistic view of the interrelationships of diverse segments of the interpersonal or interorganizational environment that traditionally are studied in isolation.

Thus it allows a second advantage in that it permits recognition of "political realities" in developing an information system. Political and economic factors have been among the least acknowledged and heeded aspects of interorganizational theory. These factors are also responsible for most of the unintended consequences for persons attempting to coordinate inter-agency cooperative efforts to provide services. This is especially true where the agencies are service-oriented. Stumbling blocks to coordination almost always involve economic and/or political issues.

For example, an insecure economy, coupled with budgetary cuts, provides a good rationale for cooperation, but simultaneously these constraints have a tendency to restrict the focus of the individual agency to basic survival needs. Scarce resources often means competition between agencies for the same resources. The network approach clearly recognizes these problems and others of the same nature generated by differences in political power between agencies involved. While a network approach is not a cure for these problems, the concept offers a basis for cooperation by bringing the participants together around a common concern, since a network by its nature is constructed to coordinate and use existing resources. Thus, the coordination of efforts is facilitated and the likelihood of both duplicative efforts and overlooking client populations is decreased, a primary benefit of cooperation.

A third advantage of the network approach is that it has a high potential for identifying and being responsive to client needs. Participants within the network, users and producers of occupational information, can directly affect both the development and delivery of information. The diversity resulting from such input helps to ensure client responsiveness of data delivery as well as fostering the dissemination of information to all users.

CHAPTER III

Procedure for Study

The first task in achieving the goal of the network study of the MRDC project was to identify elements in the network at all levels and to classify these elements as users, producers, or users/producers of occupational information. Persons involved in professional-level guidance, placement, or educational program planning decisions were considered to be users. Producers were defined as those individuals, or agencies, primarily concerned with the production of occupational supply, occupational demand, or occupational characteristics information for their own use or for use by others, either within their agency or in other agencies.

A second task was to determine the existing formal and informal linkages between elements in the network, including the form and content of communication which constitute the linkages.

The final task was to identify facilitators and barriers to interorganizational communication, using the information gained through the present research as well as relevant literature on organizational communication and social interaction.

SELECTION OF APPROACH

Since the goal of the network research project was to explore the network concept in order to suggest a model appropriate for use in Minnesota, a qualitative anthropological approach was selected, one which would elicit what anthropologist Clifford Geertz (1973) refers to as a "thick description." In order to do this, the research needed not only to trace out and describe the flow of information between producers and users, but also to explain communication between them.

An underlying assumption of this research is that behavior around the production, communication, use and sharing of occupational information in Minnesota cannot be understood outside the particular culture and ideology created in the work place by the different agencies involved. Quantitative measurements in studying organizational communication tend to isolate the respondent, while the very nature of organizational communication (or non-communication) is relational, holistic, and structured (Rogers & Rogers, 1976:25). For example, it is true that survey data can be gathered from individuals in an organization, but such an approach usually fails to take into account the position of the individual respondents in the organizational structure. The taking into account of a person's position in the organization is important for the purposes of this study since not only a person's level of authority in an organization or job in the organization directly affects his/her role in a communication network, but also his/her relationship to other persons and/or positions. Additionally, survey data normally fails to address the issue of the degree of importance informal communication plays in communication between and within organizations.

One way of discerning the ideology (beliefs, norms and values) of a social group is by asking the people involved how they feel about their position and their relationships to others that they work with in the course of their job. Perhaps a survey instrument might have been sent to a properly selected sample of users and producers, but as indicated earlier, while quantitative measurements may be quantitatively accurate, it appeared to researchers like LaPiere (1967:31) that it might be "...far more worthwhile to make a shrewd guess regarding that which is essential, than to accurately measure that which is likely to prove quite irrelevant."

As in other aspects of people's lives, behavior among and between the producers and users of occupational information in Minnesota mirrors the attitudes and expectations of these individuals (Rokeach, 1973). One advantage of an open ended interview approach is that it allows informants to tell what they feel is important to them in producing, obtaining, and using occupational information. It also allows the researcher to explore how informants view other agencies, not only in the sense of whether they feel them to be good, poor or indifferent, but more importantly, how they see them as relating to each other. For example, some user groups see their relationship to their client groups as one of service and support while others in another agency, making the same kinds of decisions, see the relationship reversed.

Another advantage of the open-ended interview approach used was that it allowed flexibility in the selection of individuals to be interviewed. As research progressed, it was considered likely that informants would identify additional producer and user groups as important to them; therefore, flexibility in research design was both necessary and desirable. Open-ended interviews also allowed the gathering of serendipitious information such as personality conflicts which informants felt might be interfering with their access to information.

But, of course, no approach is without disadvantages. One disadvantage of an open-ended qualitative approach is that it is time consuming. The research period (approximately 3½ months) did not permit the interviewing of every user and producer, thus decisions had to be made as to who to interview. In some cases the decision was a matter of an informant's willingness to be interviewed.

Due to the ethics of conducting social science research it was felt that participation had to be totally voluntary and cooperation could not be forced, either directly, by appealing to an individual's supervisor, or indirectly. Fortunately non-cooperation was rare. Thus time constraints and ethical procedures acted to limit the depth of the research. Every effort was made to ensure that each user group in every organization at every level was represented through interviews with at least two people. However, this was not always possible.

Another disadvantage, which affects the validity of the conclusions drawn from the information obtained through the interviews, as well as the specific recommendations suggested by the conclusions, relates to the accuracy of the informant's reports of their own behavior. It has been suggested by some researchers of network analysis that informant's reports of their behavior bear little resemblance to their actual behavior since people simply do not know, with

any degree of accuracy, with whom they communicate (Killworth & Bernard, 1976). However, Killworth and Bernard also found that while their informants actual communication yielded no structure, their cognitions were systematically significant. In other words, while the informants' accuracy about what they thought they were doing was open to question, they were quite systematic and consistant in how they were thinking about what they were doing (i.e., how they organized their thoughts about their communication with others). In other words, the ways they categorized other people were patterned. It is this latter aspect that this network research was exploring -- how users and producers of occupational information in Minnesota were categorizing and organizing each other in their social interactions.

SELECTION OF SAMPLE

Another factor effecting the research was the nature of networks themselves. Characteristically, a network has no head, no center and no boundaries. It is not a corporate body, but rather a system of relationships through which individuals carry on activities; in this case activities centering around the production and use of occupational information. Because they are theoretically limitless -- individuals being linked to increasing numbers of other individuals through ever widening patterns of links -- networks must be arbitrarily bounded in order to be studied.

For the purposes of this research, the network was bounded at the communication linkages between and among members of the MOICC agencies and one step beyond. For example, we examined the patterns of information flow between the Department of Education Vocational-Technical Education Division (a MOICC agency) and the Higher Education Coordinating Board (a non-MOICC agency), and between the Higher Education Coordinating Board and other MOICC agencies, but not between the Higher Education Coordianting board and other non-MOICC agencies. Because of the necessity to arbitrarily place boundaries around the network, a number of actual network participants were placed outside the network when, in fact, they are active participants. These included public libraries; chambers of commerce; universities; college and secondary school counselors and individuals and organizations in the private sector which produce, use, disseminate or are depositories of occupational supply, occupational demand, or occupational characteristics information. Therefore, it is important to stress that the actual network of users and producers of occupational information is much larger than this report might lead one to believe.

Research began with interviews of the users and producers in the Department of Education's Vocational-Technical Education Division and the Department of Economic Security's Job Service, Program Management Support, and Vocational Rehabilitation Divisions and the CETA Statewide Coordination Unit. It rapidly expanded to include producers and users in non-MOICC agencies such as the State Planning Agency (state demographer), Higher Education Coordinating Board, four (of ten) CETA Prime Sponsors, the State Services to the Blind and Visually Handicapped, other units and divisions in the State Department of Education and Area Voational-Technical Institutes.

Persons were selected for interviewing on the basis of the positions they held in each of these agencies. The positions were selected to be representative of both level of authority and user groups in each agency.

PROCEDURE

Because the primary users and producers of occupational information in Minnesota are located in bureaucratic organizations, it would have been difficult if not impossible to conduct research with state agencies without the knowledge and approval of agency heads. Letters of introduction signed by the members of the MOICC were sent to the Commissioner of Education, Executive Director of the MN Higher Education Coordinating Board, Chancellor of the State Community College Board, Director of the State Planning Agency, Commissioner of the MN Department of Economic Security and the Commissioner of the Minnesota Department of Economic Development and the commissioners and assistant commissioners in the agencies involved were interviewed. During these interviews every effort was made to ensure they were made fully aware of what the research involved, what questions would likely be asked of their personnel, any advantages to their agency of the completed research and any possible implications of the research for their agency. Additionally, their ideas were solicitated as to who in their agency might be a useful source of information. This latter information not only served to identify names for future interviewing, but also provided information as to the formal and informal communication within and between agencies and suggested added areas for exploration. These interviews were completed within the first weeks of the research and the research rapidly proceeded to the other levels of producers and users in the agency. A time frame can be found in Appendix A.

Interviews with 48 users and producers ran from 45 minutes to 2½ hours each; 95% were at least one hour in length, most lasted an hour and a half. All were semi-structured, open-ended interviews, the question areas tailored to each user or producer group and for each level of authority in the agencies. A list of question areas for each user/producer group can be found in Appendix B.

In addition, formal organizational charts were collected for each agency and informants were questioned concerning the formal and informal patterns of communication in their agency and/or unit. Hypothetical "problems" were also proposed concerning both administrative and job-related matters in an attempt to explore how the various informants coped with difficulties in communication within their agencies and in their dealings among agencies. This served not only to examine the degree of difference between the formal organizational structure of the agencies and the informal day-to-day ways of getting things done, but also allowed comparisons between agencies in this respect.

A number of highly informal and completely unstructured meetings also took place between various informants and the researcher during which information was volunteered or information offered in earlier interviews expanded upon.

Additionally, the researcher made every effort to cross check the information received from one informant with the perspective of another.

Early in the research, it became obvious that the type of information users considered relevant, the specific information they actually used and how they used the information was guided by the kinds of decisions they made (Figure 4). A typology emerged which served to define the elements in the Minnesota Occupational Information Network and which acted as a guide for understanding the relationships among elements. It also provided a framework for examining the roles the various individuals and agencies play in the network of communication about occupational information. It should be stressed that the network which is described in this report is an "emic" description in that it is a description from the "insiders" point of view. That is to say, the network described below is how people IN the network conceptualize it and see it as being structured and operating.

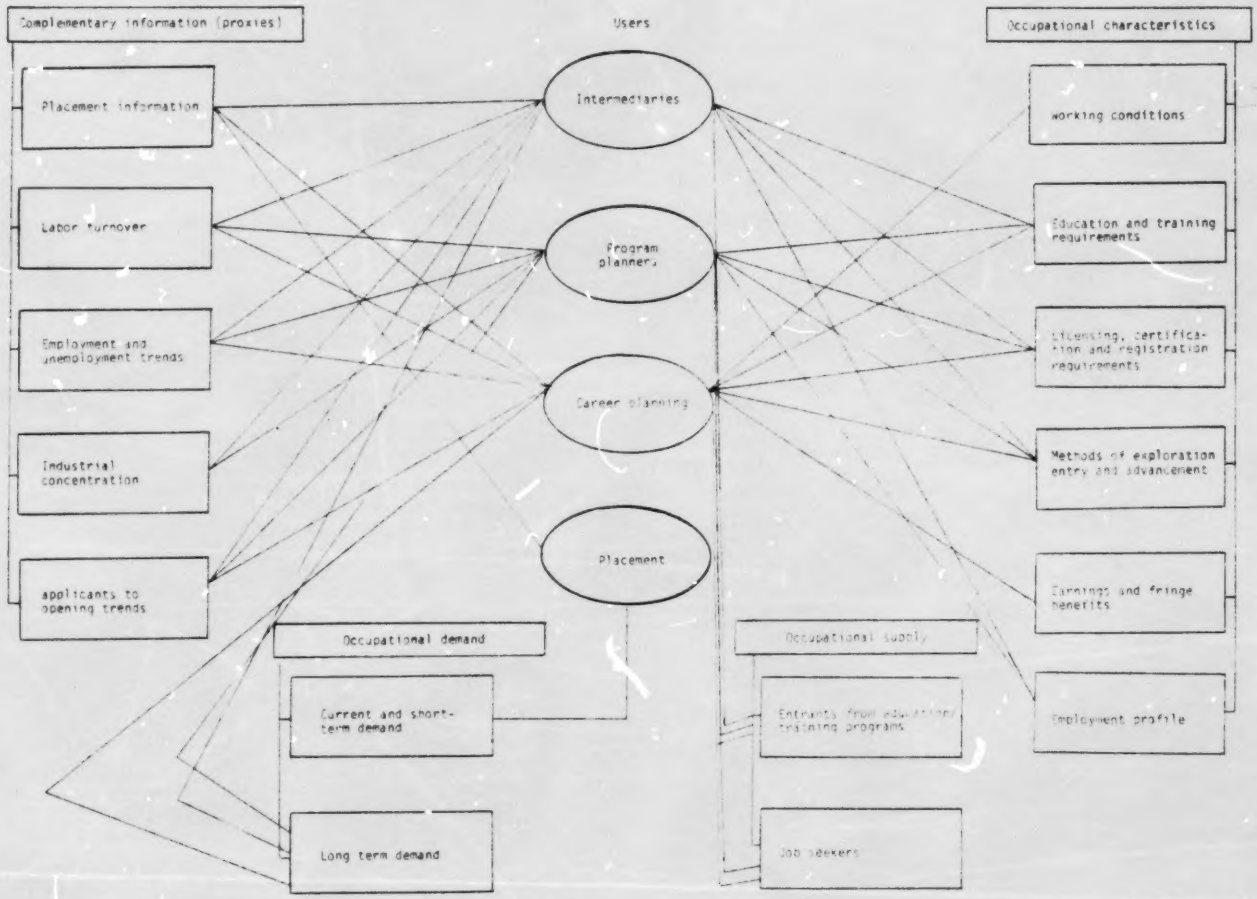

Figure 4. Information used

CHAPTER IV

Findings About the Minnesota Network

A network consists of interconnected individuals who are linked by patterns of communication flows (Rogers & Rogers, 1976). The Minnesota Occupational Information Network consists of individuals and groups of individuals connected to each other through their mutual need for and use of occupational information. These individuals and groups participate in enormously complex and at times not too clearly articulated patterns of communication links.

The network itself has no concrete reality as such, but exists as a flexible set of relationships between individuals. In order to attempt to understand the Minnesota network in terms of how various individuals are connected to each other, it is necessary to examine the context and the nature of the communication linkages as well as the actual formal and informal communication patterns within and among agencies. A closer examination of the relationships between and among network elements is crucial for not all elements share the same level of involvement or perform the same role or function within the network.

ELEMENTS OF THE NETWORK AND THEIR CLASSIFICATION

Producers
Intermediaries
Ceta Prime Sponsor Directors
Program Managers--Dep Ed
Office of Statewide Ceta Co-ordination
LMI Centers (when acting as distributors)
Job Service Field Operations and Staff Services
DVR Management and Program Support
VocEd Operational Services (when acting as evaluators)
Ceta Linkage Unit (when acting as evaluators)
Educational Library
Program or Curriculum Planners and/or Developers
Program Planners and/or Directors at 33 AVTIs
Secondary Vocational-Technical Program Planners at Secondary Institutions
Ceta Program Planners
Curriculum Planners at the State Department of Education
Secondary and Post-Secondary School Administrators
Ceta Linkage Unit (when acting as planners)
Vocational Counselors Involved in Job or Career Planning
DVR Counselors
Ceta Counselors
Counselors at the State Services to the Blind and Visually Handicapped
Secondary and Post-Secondary Counselors
Job Service Counselors
Vocational Counselors Involved in Placement
DVR counselors
Ceta Counselors
State Services to the Blind and Visually Handicapped
Placement Specialist (or Instructors) at Secondary and Post-Secondary Institutions
Job Service Interviewers

Figure 5. Typeology

In one sense the relationship between the network elements can be conceptualized as a series of concentric circles with the producers of occupational information at the center (Figure 5). The information which is produced or generated at the center flows outward. The further from the center the user groups are, the looser and broader becomes their definition of what constitutes relevant information and the more kinds of information they use. Additionally, increasing stress is placed on the use of and importance of less formal sources of information the further "out" in the network one goes and the greater the structural separation (i.e., the more intermediaries there are between the producer and users).

NATURE OF NETWORK LINKAGES

Formal Linkages

The Minnesota network is really composed of two discrete networks which exist side by side and occasionally overlap. One network consists of the communication linkages which are specifically defined and regulated by the formal organizational structures of the producer and user groups as well as by the formalized relationships between them. These formalized linkages within and among agencies are characterized first, in that they are required by either the nature of the job one performs or mandated by the organizational structure itself. Second, they almost always occur in a work place and are guided by written rules. When they occur between agencies, the links are usually instiuted to deal with an exchange of resources (money for services -- e.g., when a user group contracts for the gathering or specific data from a producer in the same of another agency). Ideally the exchange is supposed to be reciprocal, but in fact is seldom thought to be by the persons involved. These formalized contacts between personnel in different agencies also usually include some kind of allowance for formalized feedback such as committee meetings, task forces, or advisory committees which are instituted to facilitate cooperation. The primary identifying characteristic of the formal linkages is that they are almost always written in form -- the most common and frequently found link in the formal network is a passive paper link in which a specific piece of information, such as a report, is routinely distributed by means of a distribution list which has evolved over a period of time.

Informal Linkages

A second network consists of unregulated, but none the less systematic, informal communication linkages between individuals which have emerged from the formalized framework. The informal linkages are characterized in that they, in contrast to formalized contacts, are created and/or mobilized through a perceived "need" for specific information. They very often occur in a work setting, but occasionally take place in less formalized settings such as coffee shops, restaurants, or during walks. Such contacts are guided by "unwritten" rules which are formulated by the value and prestige systems of the individuals and the organizations to which they belong and by the perceived relationships between organizations and individuals. They involve an uneven exchange of

information or help which is not time bound but rests on the promise of future assistance when needed for help rendered now -- "You help me now, I'll help you when you need something a few months from now." The informal linkages involve non-formalized feedback; positive feedback is evidenced by continuation of the link over time. Finally, in contrast to the formalized linkages, these informal contacts almost always involve face to face or verbal contact. Most frequently, the links are made and maintained through telephone calls between individuals.

Informal links in the Minnesota network for the most part tend to be treated as resources while the formalized linkages are usually treated as sources. That is to say, sources are people who provide information and resources function as available means through which to reach a source. If the formal network fails to supply, or provide a means for obtaining the information one needs for the satisfactory performance of one's job, individuals producing or using occupational information in Minnesota mobilize their informal networks. They also mobilize their informal networks when the formal organizational structure does not provide adequate or satisfactory means to cope with problems which arise in the course of doing one's job, such as the inability to acquire desired information from a producer or deal with a personality conflict. The circumstances under which informal linkages are mobilized vary from individual to individual and from agency to agency.

Mobilizing an informal link in the Minnesota Occupational Information Network depends on a number of factors, and in any given circumstance there are alternative paths and linkages which may be used. Which path is chosen in a particular circumstance depends first on the individual's assessment of the problem (i.e., Is it a problem within the agency or is it difficulty dealing with someone in another agency who is not cooperating?). Second, the person's own place and function in their agency and, if another individual is involved, their place and function are taken into account. Third, the formal organizational structure of both agencies (if this is a cross-agency problem) as well as the informal communication in the agency or agencies must be assessed (i.e., Could the problem be taken care of informally or does it have to go through the "chain of command"?). Fourth, the individual makes an assessment of their own relevant contacts (i.e., Do I know anyone who can help me, such as the non-cooperating individual's supervisor or subordinate?). Fifth, the individuals own personal likes and dislikes enter into his/her willingness to use any particular contact (i.e., Is there a personality conflict?). Finally, the selection of a particular link is affected by the individual's perceptions of other individuals and agencies and how they operate (i.e., an individual's value judgments about other persons and agencies).

Not all users and producers have equally extensive informal networks. Some agencies encourage the development of informal relationships within their agencies and with individuals in other agencies more than others. However, users for the most part are much more likely to initiate and maintain informal relationships than producers. Producers, when they establish informal contacts at all, tend to establish them with other producers (Figures 6a & 6b). The more flexible the job, that is, the more kinds of decisions the individual makes, the more likely extensive personal information networks are to be

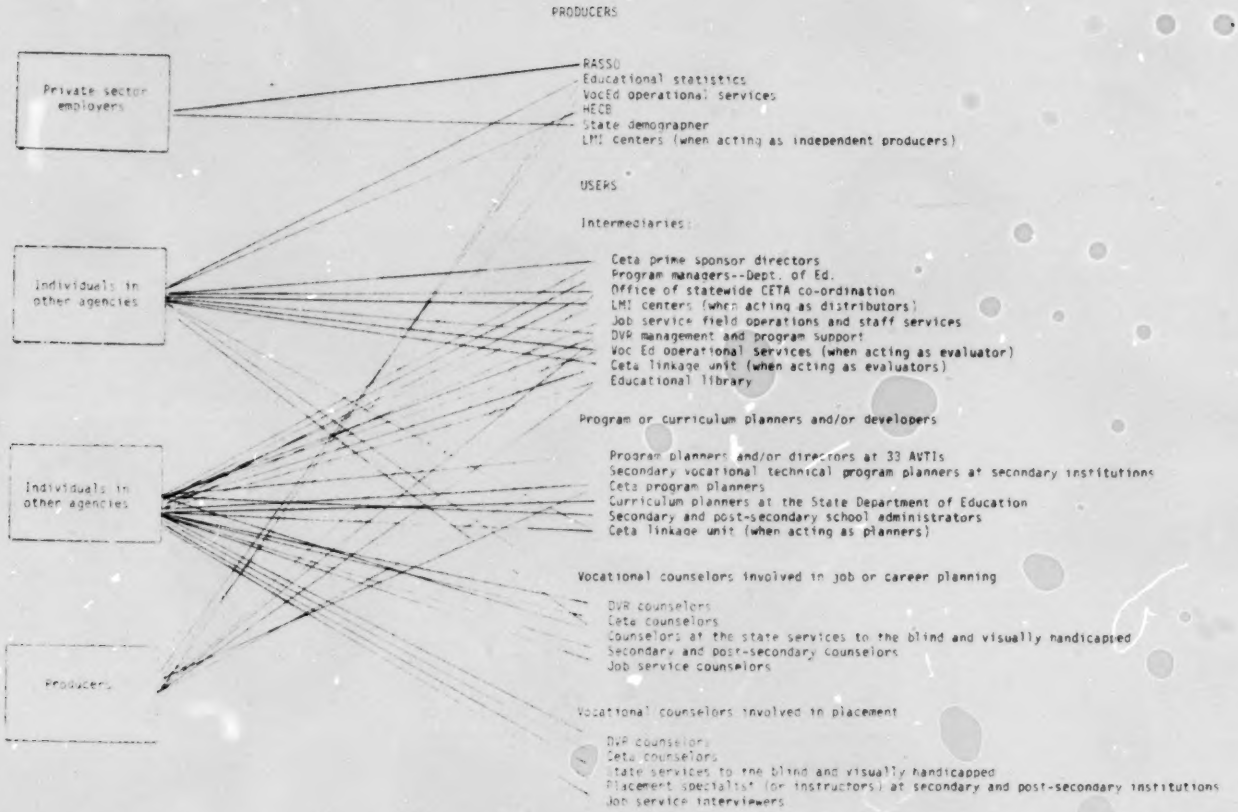
PRODUCERS
Private sector employers
Individuals in other agencies
Individuals in other agencies
Producers
RASSO
Educational statistics
VocEd operational services
HECB
State demographer
LMI centers (when acting as independent producers)
USERS
Intermediaries:
Ceta prime sponsor directors
Program managers--Dept. of Ed.
Office of statewide CETA co-ordination
LMI centers (when acting as distributors)
Job service field operations and staff services
DVR management and program support
Voc Ed operational services (when acting as evaluator)
Ceta linkage unit (when acting as evaluators)
Educational library
Program or curriculum planners and/or developers
Program planners and/or directors at 33 AVTIs
Secondary vocational technical program planners at secondary institutions
Ceta program planners
Curriculum planners at the State Department of Education
Secondary and post-secondary school administrators
Ceta linkage unit (when acting as planners)
Vocational counselors involved in job or career planning
DVR counselors
Ceta counselors
Counselors at the state services to the blind and visually handicapped
Secondary and post-secondary counselors
Job service counselors
Vocational counselors involved in placement
DVR counselors
Ceta counselors
State services to the blind and visually handicapped
Placement specialist (or instructors) at secondary and post-secondary institutions
Job service interviewers

Figure 6a. Frequently found formal links

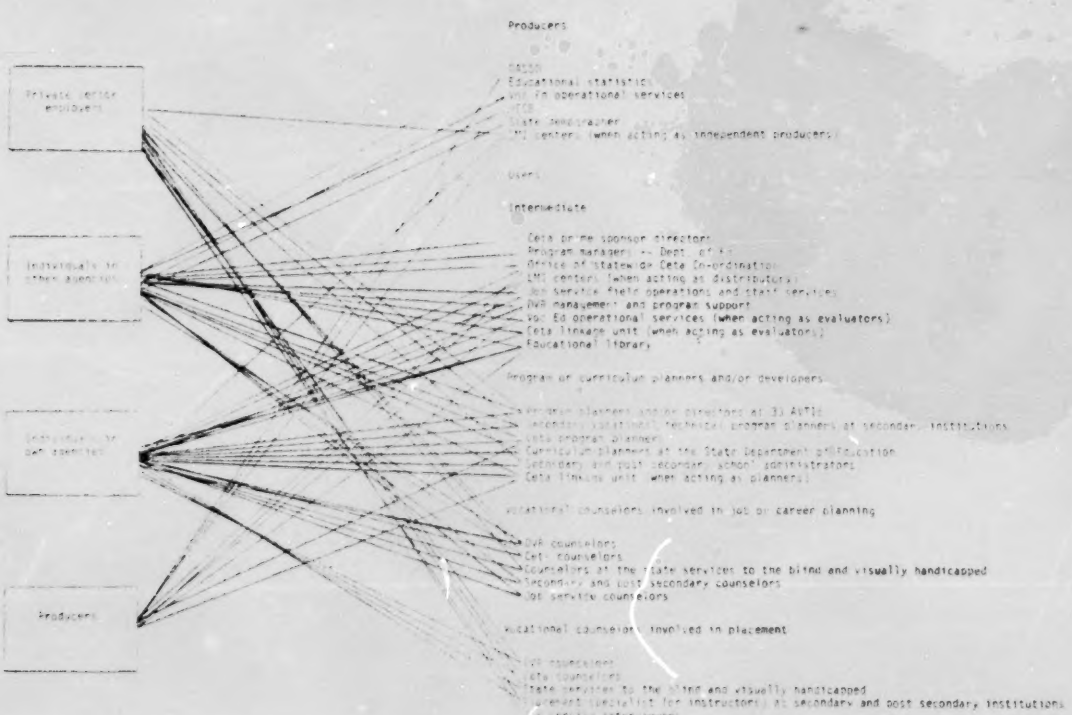
Producers
Private sector employers
Individuals in other agencies
Producers
Intermediate
Ceta prime sponsor directors
Program managers -- Dept. of Ed.
Office of statewide Ceta Co-ordination
LMI centers (when acting as distributors)
Job service field operations and staff services
DVR management and program support
Voc Ed operational services (when acting as evaluators)
Ceta linkage unit (when acting as evaluators)
Educational library
Program or curriculum planners and/or developers
Vocational counselors involved in job or career planning
DVR counselors
Ceta counselors
Counselors at the state services to the blind and visually handicapped
Secondary and post secondary counselors
Job service counselors
Vocational counselors involved in placement

Figure 6b. Frequently found informal links

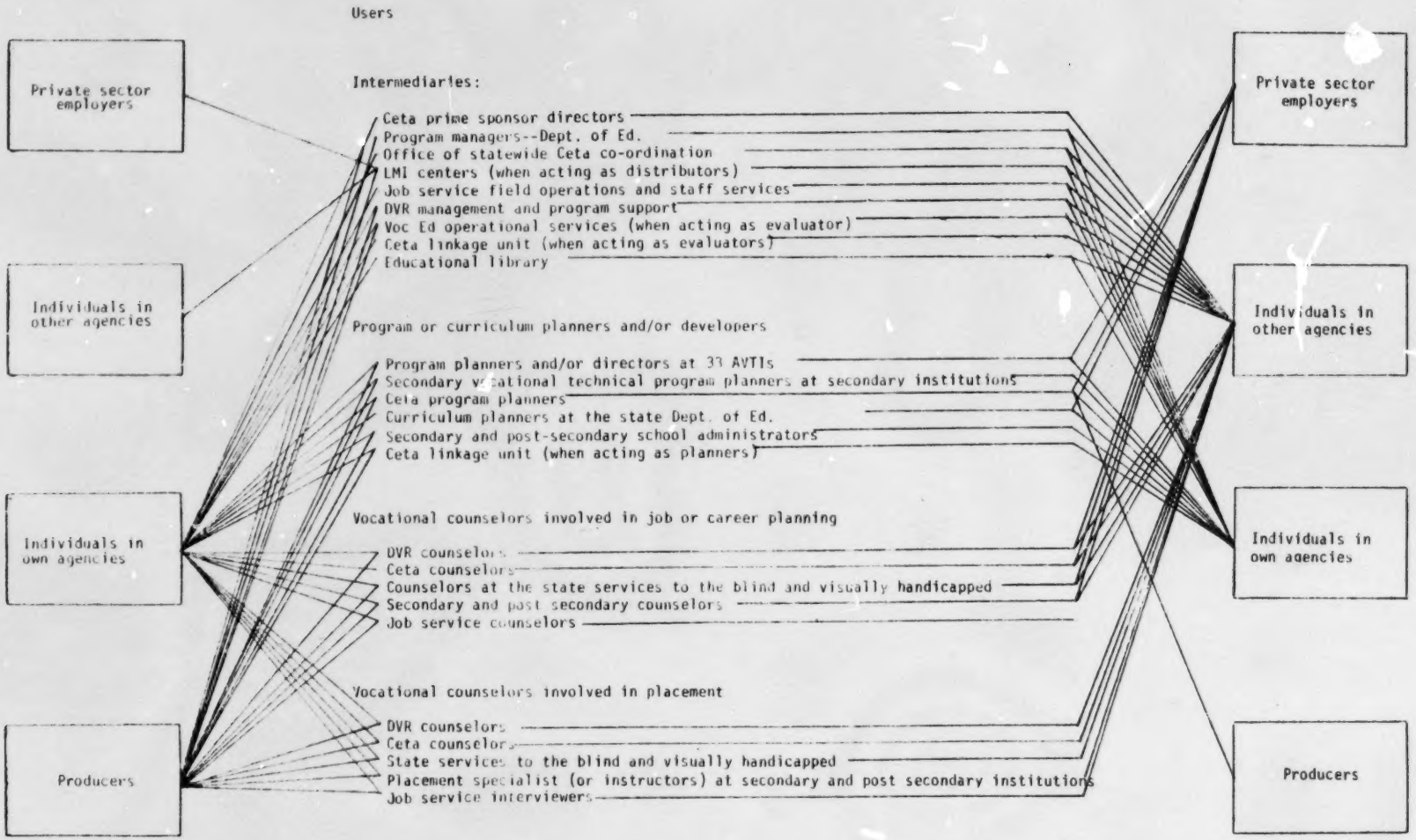
Users
Private sector employers
Individuals in other agencies
Individuals in own agencies
Producers
Intermediaries:
Ceta prime sponsor directors
Program managers--Dept. of Ed.
Office of statewide Ceta co-ordination
LMI centers (when acting as distributors)
Job service field operations and staff services
DVR management and program support
Voc Ed operational services (when acting as evaluator)
Ceta linkage unit (when acting as evaluators)
Educational library
Program or curriculum planners and/or developers
Program planners and/or directors at 33 AVTIs
Secondary vocational technical program planners at secondary institutions
Ceta program planners
Curriculum planners at the state Dept. of Ed.
Secondary and post-secondary school administrators
Ceta linkage unit (when acting as planners)
Vocational counselors involved in job or career planning
DVR counselors
Ceta counselors
Counselors at the state services to the blind and visually handicapped
Secondary and post secondary counselors
Job service counselors
Vocational counselors involved in placement
DVR counselors
Ceta counselors
State services to the blind and visually handicapped
Placement specialist (or instructors) at secondary and post secondary institutions
Job service interviewers
Private sector employers
Individuals in other agencies
Individuals in own agencies
Producers

Figure 7. Formal vs. informal sources of information

found. Moreover, as can be seen in Figure 7, a particular user's informal source of occupational information might be very different from their formal source. It should be stressed also that users tend to utilize their informal sources of information rather than the occupational information provided to them from their formal sources. This is particularly true for vocational career planners and placement specialists and some educational planners.

However, it should also be emphasized that while very few of the lower level users maintain direct informal links with producers themselves, they occasionally maintain indirect informal links through intermediaries or liaisons in their own agencies or in some cases with persons working similar tasks in other agencies who possess direct formal or indirect informal links with producers in their own or other agencies. Thus, a CETA counselor who has no direct formal link or direct informal link with a producer might use an informal link to a counselor in another agency or an intermediary in their own agency who has such a link to obtain information or knowledge about information they feel they need, but cannot obtain directly (Figure 8).

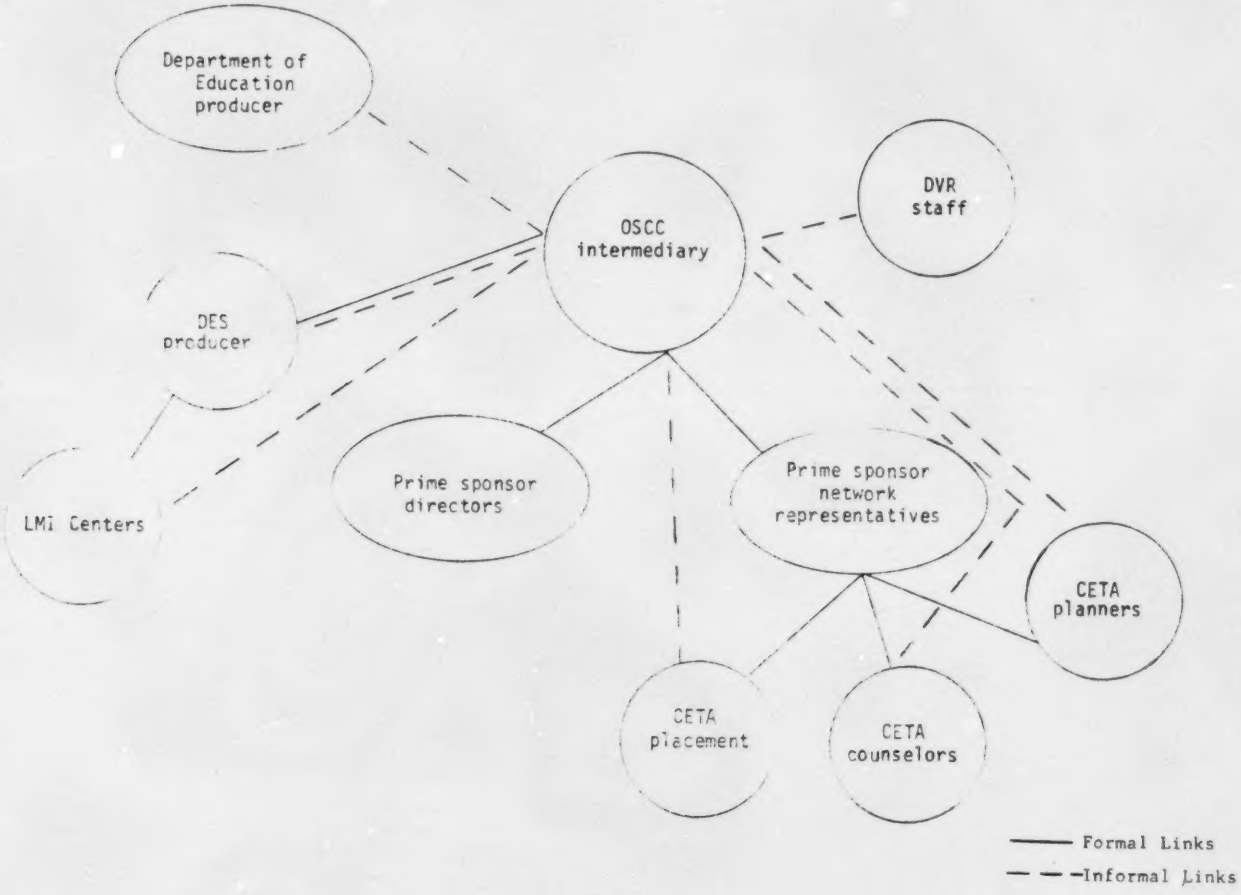

Figure 8. Examples of formal and informal networks

The informal linkages in the Minnesota Occupational Information Network, while flexible and complex are also systematic and more stable than might be expected. The relative stability and systematic character of the linkages in the network can be explained in that while the structural organization varies from agency to agency, the structural relationships within and between agencies do not.

Put another way, although each agency may be internally organized differently, the structural relationships (how people and divisions are placed relative to one another) are stable. For example, each user or user group in every agency in the Minnesota network is connected within their own agency to a line authority and to a staff who provides them with service and support. Figure 9 gives an example of four. Although the support staffs have no direct "line" authority over their user groups, they are involved in indirect control through evaluation processes and in almost all cases they also serve as "gatekeepers" for funds and information from outside sources which flows through them to users. Some user groups, such as the Office of Statewide CETA Co-ordination, the LMI centers and the CETA-Educational Linkage Unit are located in these support staffs.

Figure 9. Structural relationships: four examples

Formal links within organizations thus run between these "line" or governing authorities, support staffs and users. Formal links among network elements tend to occur between people in support staffs. Informal links within agencies, when they are present, run between intermediaries in the support staffs and users. Informal links between governing authorities and support staffs and users are very rare and are common only in one MOICC agency organization. Informal links between agencies are usually found between agencies' staff intermediaries, between staff intermediaries and users in different agencies and between users in different agencies (Figure 10).

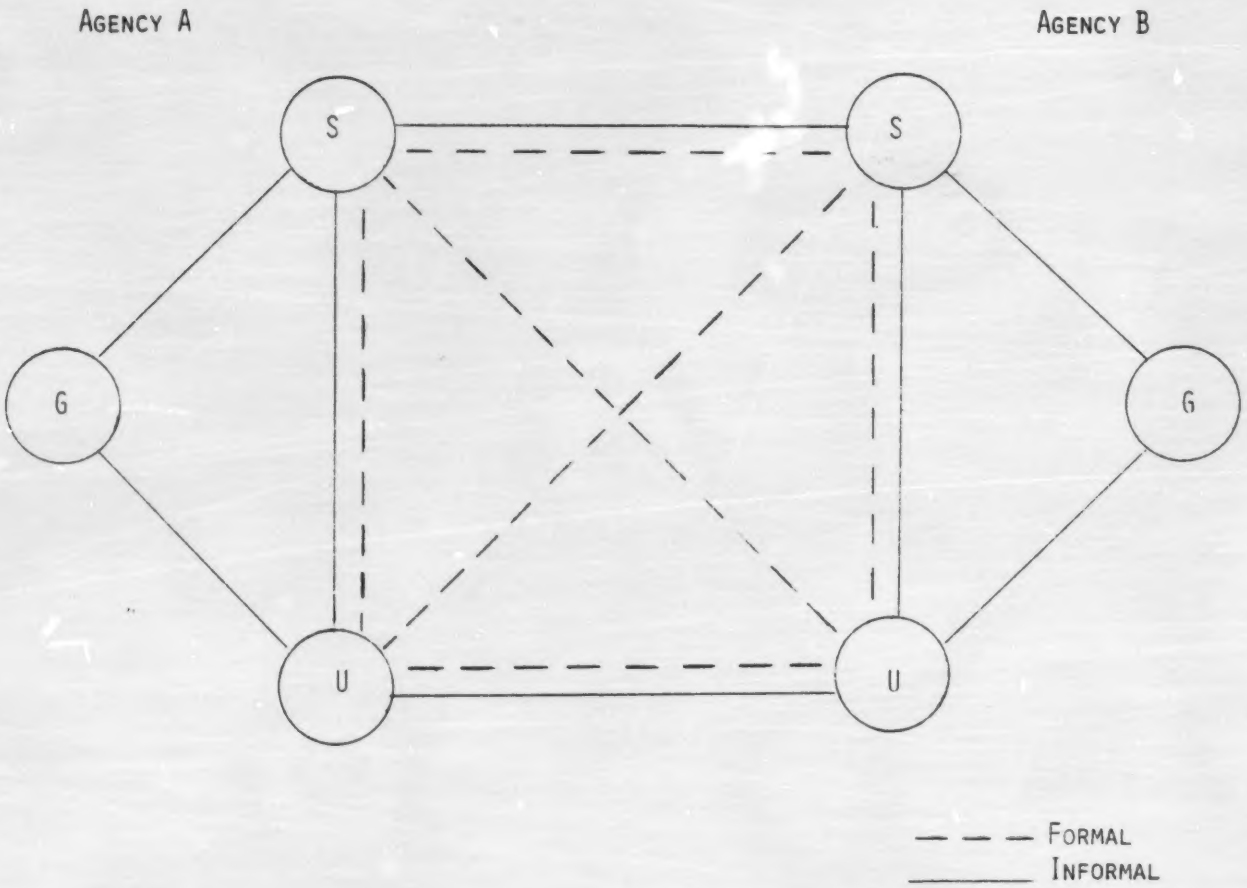

Figure 10. Patterning of linkages

But, the same degree of intensity of informal links is not found within and between ALL agencies. Some agencies actively encourage the establishment of informal links and others, while not actively discouraging their development, do not provide as fertile a ground for their growth. Informal links within agencies are much more frequently found within the Department of Education VocationalTechnical Education Division (VocEd) and the Department of Economic Security's Division of Vocational Rehabilitation (DVR). Informal links are less commmon between and within other divisions in the Department of Economic Security, and some divisions in the Department of Education. A number of factors account for the differences.

First, in the VocEd and DVR divisions there is a very strong feeling among all the members at all levels of authority, including top management, support staff and users (local administrators and counselors), that they share basically common goals and are working as a team. They also have, for the most part, received the same level and kind of training. There is, moreover, a consensus among members of a common and shared definition of how to go about achieving the goals of the organization and serving their clients. Additionally, they depend on each other for peer respect. In other words, there is a more universal value system in operation for all levels of the organization.

However, for the other MOICC agencies, individuals at different levels of authority feel the levels to be discrete. People at different levels may have received different levels and kind of training. They are evaluated differently on each level, and although they also feel they are working as a team toward common goals, the idea of how to go about doing it differs within and between levels of authority. Thus, there is no universal value system within the organization but a number of separate value systems which may conflict at times. This is a commonly found feature of organizations performing disparate functions. Informal links which exist within such organizations tend to be based on social relationships rather than created through a "need". Since they are based on social relationships rather than a job-induced need, they are highly individualistic and the links are unevenly distributed within such agencies.

Simply put, if there are thirty individuals at a user level in one of these latter agencies, only two or, at the most, three individuals may have indirect informal links to other levels of authority in their agency. However, in the former type of agency, a much larger proportion of individuals at each level of structure have direct informal links with all the other levels of structure. This affects network development directly since the number of potential links in an agency is much greater if there is extensive informal communication between levels of authority in an agency. Therefore, between agency communication may be inhibited as it is necessary to find the "right" person in the second type of agency while in the first agency, any link inside the agency provides potential access to all levels of authority in that agency. In the second type of agency, if a person seeking access doesn't have a particularly useful link, it is necessary to go through the formal organizational structure in both agencies (since two formal structures are involved) which, in addition to being time consuming can be highly problemmatic, especially if there is difficulty in inter-agency cooperation for any reason.

The differences in the extent to which information communication links are present within any given agency/agencies points up the importance of the intermediary level users located in the support staffs of the various agencies. As noted earlier, because of the structural relationships in the network agencies, these users function as liaisons or bridges within and between agencies. Thus, informal links with these persons facilitates communication both within and between agencies since these become the "right" person with which to establish a link.

As shown in Figure 11, an intermediary may have formal links with intermediaries in another agency and a producer in his/her own agency. He or she also almost certainly has direct informal links to a producer and another intermediary in another division of his/her own agency as well as an intermediary in still another agency. Such links are very frequently found in and between network agencies. Using both the formal and informal links, (written or verbal), the intermediary at the center can serve as a liaison or bridge between many persons in at least three agencies (his/her own and two others) and between several divisions within his/her own agency.

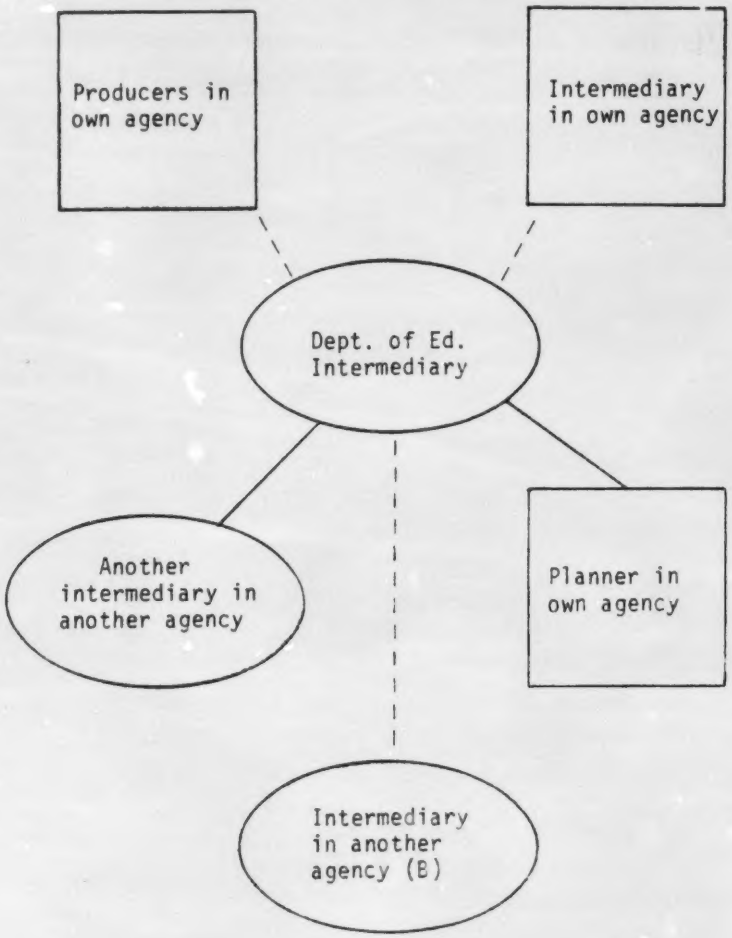
Producers in own agency
Intermediary in own agency
Dept. of Ed. Intermediary
Another intermediary in another agency
Planner in own agency
Intermediary in another agency (B)

Figure 11. Importance of intermediaries as network liaisons

FORMAL INFORMATION FLOW

The formal distribution of written occupational supply, occupational demand and occupational characteristics information within and between agencies is a relatively efficient process in terms of getting information to people. As indicated in Figure 12, a given producer (in any agency) will obtain raw data from its source and produce a written report or summary table which they distribute internally within their agency and externally to other agencies. As part of their internal distribution, such a report or summary table will be sent to individuals in the agency's governing authority (primarily for informational purposes) as well as intermediary level users in the support staff. As part of the internal distribution, it also may go directly to that agency's other users, but most frequently it reaches them through intermediaries.

The producer's external distribution (outside their agency) also includes other producers in other agencies and intermediaries in other agencies. These other producers then may use the information they receive along with data from their own internal source to generate other information which they in turn distribute within their agency and to producers and intermediaries in other agencies.

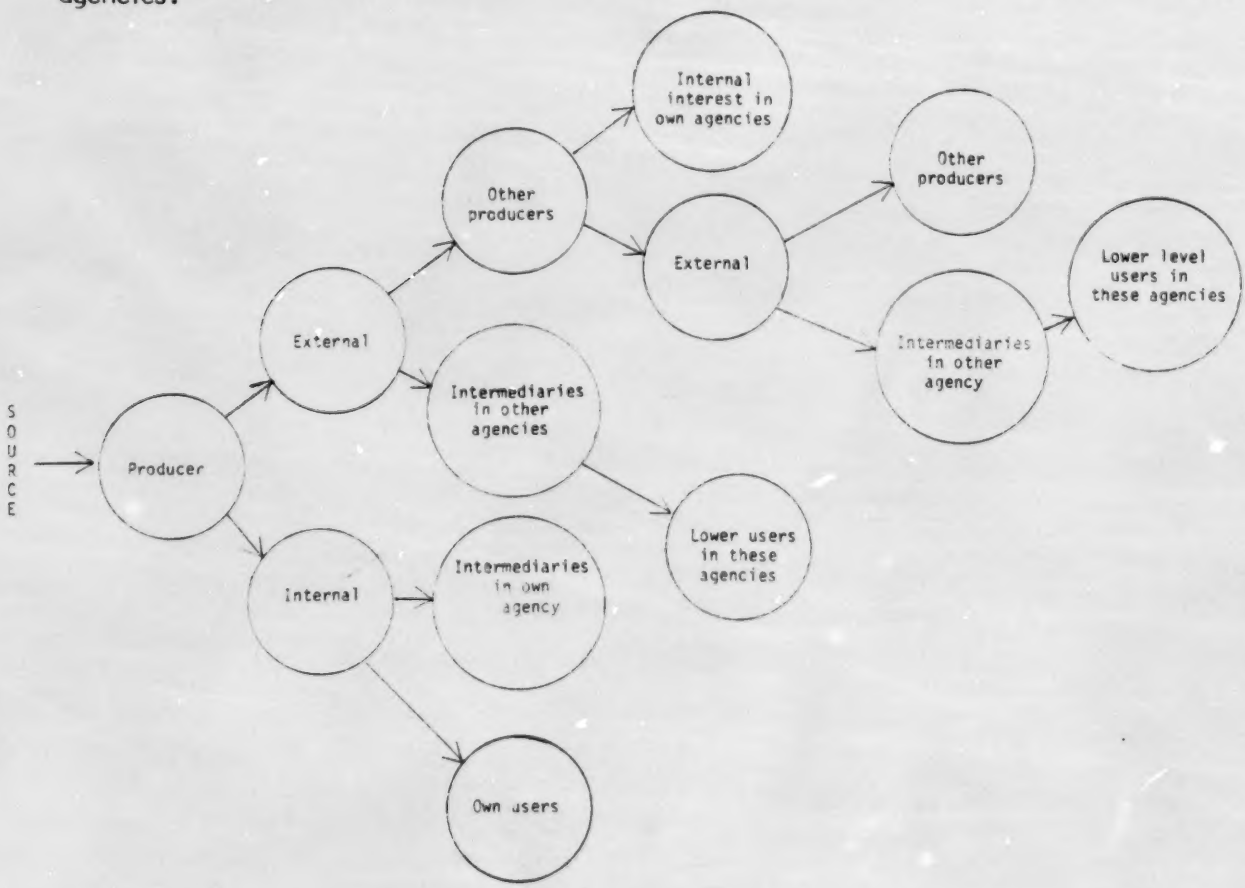

Figure 12. Formal information flow

However, administrators, planners and counselor users in any given agency tend to be structurally isolated from direct communication with producers. This is especially true when the users are located in different agencies from producers. The users compensate for their isolation by initiating direct informal links with producers, intermediaries or users in other agencies. Planners and some administrators tend to link directly with producers while other administrators and counselors usually establish indirect informal links to producers using intermediaries or users in other agencies as liaisons. It should be stressed, however, that this is done not necessarily to gain ACCESS to information but rather access to knowledge ABOUT using the information they receive or for learning about "new" information which has not yet "trickled down" to them through the distribution system. This structural isolation of planners and counselors is problematic since all the formal and informal feedback mechanisms are located between producers and intermediaries. Counselors and planners have opportunities for providing feedback only through their support staff intermediaries. There is no direct means through which the lower level planner or counselor can contact the producer.

This is not to say, of course, that no counselor or planner has direct contact with a producer, but indications are that such contacts are rare and always informal. As a result of this structural isolation and lack of means to provide and obtain direct feedback between users and producers, the users feel that producers aren't concerned with the user's special problems. On the other hand, the producers feel counselors and planners lack the statistical sophistication to recognize and appreciate the limitations of their data and thus don't know how to use it properly. This causes the counselors and planners to go out of the system for their information, "creatively" use information, or employ what might be a less appropriate source. The problems are exacerbated if the producers and users are located in different agencies.

This does not mean that the support staff individuals are not doing their mediating job properly. The difficulty appears to lie in that when the feedback mechanisms exist between agencies they are instituted because there is an exchange of tangible resources (i.e. money for data). Often, when something is at stake, the agencies tend to become competitive, each wanting to insure they get their rightful "share". This seems to create misunderstandings which then affect communication and cooperation between agencies. Feedback mechanisms within agencies appear to be most satisfying (for both producers and users) in organizations where there is an extensive informal communication within the agency.

In general, findings from the Minnesota network research can be summarized as follows:

- Two networks exist in Minnesota, one formal and one informal.
- While there is some degree of overlap between the two networks, the informal network is much more extensive and used much more often than the formal network.
- The informal network linkages are relatively stable.

- The stability of the informal links is due primarily to the structural relationships between network elements.

- Formalized exchange of resources or regulations establishes the formal links.

- Mutual benefit tends to motivate the informal linkages.

- Formal links tend to be treated as sources of information, while informal links tend to be used as resources through which access is gained to sources which are otherwise not available.

- There are different degrees of participation in the informal network by various agencies.

- There are specific patterns of communication within and among network agencies.

- Producers tend to form informal links with producers in other agencies.

- Users tend to link together or with support staff persons (intermediaries) in other agencies.

- There is little direct formal or informal feedback between "grassroots" users and the producers.

- The sources which provide information are not necessarily the places where information used is obtained.

- Intermediaries in support staffs perform important liaison or bridge functions in linking together persons in different agencies.

PROBLEMS WITH PRESENT PATTERNS OF COMMUNICATION LINKS

Problems in the present pattern of communication links in the Minnesota Occupational Information Network are of two general categories: 1) problems related to the access to information, and 2) problems related to the use of information.

A common misconception about communication problems in organizations is that they are due primarily to restricted information flows and the solution lies in unclogging blocked communication channels within and between organizations and/or establishing or formalizing new ones. However, the major communication problem in any communication network is more often information overload. Communication research has indicated that freer or less restricted communication flows may cause problems more often than it solves them (Rogers and Rogers, 1976:91).

It is necessary for agencies in general and MOICC agencies in particular to deal with the problem of too much information. As more pieces of information

come to a particular user, the greater the likelihood of a vast majority of it never being read. Furthermore, an individual who is overloaded with information is not only inefficient him or herself, information overload incapacitates a person from effectively discriminating between "good" information and "bad" information. Since these overloaded individuals are integrated into communication networks with other persons in their own agencies and with persons in other agencies, they are also likely to be the cause of inefficiency in others (Lanzettta and Rody, 1957).

Some user groups in the Minnesota network, already under pressure by their agencies to produce a high level of "output" with respect to serving their client population, find themselves having to deal with unmanageable amounts of information which (from their point of view) are irrelevant to their performing their jobs but which they are SUPPOSED to be using but also don't know how to use. Some individuals respond by attempting to cope with the difficulty by filtering out certain categories of information, either effectively limiting their definition of "relevant" or "reliable" information. Others respond by encouraging active and aggressive "gatekeeping" in their agency to screen information coming in from outside sources before it reaches the ultimate users.

Unfortunately, there are problems inherent in both types of responses. In the first case a "circle of ignorance" develops in which there may be a lot of sharing of information and information about information, but since no new type of information is allowed into the system but is rejected on the grounds of "unreliability" or "irrelevancy", the same information is being shared. This also multiplies errors in information use as any errors are shared.

In the second instance the danger is that through arbitrary gatekeeping, relevant information may not reach persons who should be getting it. Moreover, there is great likelihood of distorting the information since the more hands it passes through, the more chances exist for the informaton to be subtly changed at each step in the process until it no longer resembles the original information. This is a particular problem for producers since much of the information in the occupational information network in Minnesota is generated from information obtained from producers in more than one agency. Additionally, the more gatekeepers there are between producer and ultimate user, the longer the information takes to "trickle down" to the user through the communication channels and the less likely the "fit" between what the producers are generating and what the user requires.

Given the present state of affairs in the Minnesota network, one solution to the problem of information overload is to increase feedback directly between the producers and ultimate users of information. The organizational structures in the MOICC agencies and those agencies having regular communication with MOICC agencies appear to already provide adequate structural mechanisms for dealing with information overload by furnishing effective gatekeepers.

Problems related to the use of occupational information in the Minnesota network are more complex and difficult to deal with since they are partly a consequence of inadequate or imperfect data bases as well as due to a lack of effective feedback between producers and users.

A user needs survey completed in March, 1980, sought to assess the users familiarity with, use of, and need for the four major types and sources of occupational information in Minnesota. The survey results clearly indicate first that users are relatively unaware of sources of some types of occupational information. Secondly, of those sources of which they were aware, they expressed dissatisfaction with the format of those sources. Third, they indicated that the present data sources available in Minnesota do not address the particular needs of guidance personnel, administrators, program managers, planners, and job development and placement staff; particularly those data sources which generate occupational demand information. Occupational characteristics information presently in the system was felt to be adequate, and occupational supply information fell somewhere between the two.

The findings of the user needs survey are both consistent with the communication patterns found among and between elements in the Minnesota network and also highlight communication problems which arise due to inadequate data bases or problems that some categories of users have in employing some forms of information and learning about new ones.

The primary producer of occupational demand information has one of the most efficient formal distribution systems for the dissemination of occupational information to be found in the Minnesota network. However, although the information is considered by all to be statistically "good" in terms of accuracy and reliability, virtually all administrators, vocational guidance and placement counselors and most planners and program managers in almost all organizations (including the one which produces the information) feel the form in which the information is generated and/or published is not in accordance with their requirements for use. Either the desired breakouts cannot be made or the data is not analyzed, interpreted, and summarized in a form users consider worthwhile or advantageous to them.

As a result, much of the occupational demand information is "washed out" of the system either through being automatically classified as irrelevant or worthless by users or by being intercepted by the organizational gatekeepers. Users compensate for the "lack" of occupational demand information by going to informal sources or creatively using the demand information which reaches them without adequate regard for the limitations of the data.

It must be stressed at this point that this is also true of other occupational information produced in the Minnesota network and not just occupational demand information. Problems between producers and users concerning inadequate or unresponsive data bases are endemic to the Minnesota occupational information network. The difficulties surrounding data use can be viewed as a primary reason for the emergence of the extensive network of informal links between and among users and producers in state agencies in Minnesota both within and between agencies as well as into the private sector.

Although some of the difficulties regarding data format might be alleviated through regular and effective direct feedback between producers and users, the actual reality is that the extent to which the data can be gathered, manipulated and analyzed by producers is limited. A number of considerations affect the

degree to which data bases can be changed. First, there is the fact that much of the information is gathered and funded for other purposes and, as such, the data first must meet specific requirements which may be in direct opposition to the interests and requirements of the designated users in this study. In other words, the data MUST be gathered in a form which will not allow the breakouts the users being discussed here need the most.

Secondly, some occupational information produced in Minnesota is generated by several agencies to meet their specific requirements and agency needs. Thus most of the major data sources are not comparable (this issue is addressed in greater detail in the companion report, "Minnesota's Occupational Information System: Further Development and Field Testing"). Since the data bases are not comparable, some occupational trend information which is particularly desired by users cannot be made available.

CHAPTER V

Recommendations for Further Network Development in Minnesota

As indicated in an earlier section of this report, a network consists of interconnected individuals who are linked by patterned communication flows. A network approach implies a concern for the informal relationships which exist inside a formal system. The common element which holds a network together is, in the case of the Minnesota network, a mutual concern with common work tasks and a mutual interest in the development and use of occupational information in order to improve services to clients.

Data from the network research interviews indicate that agencies and individuals in the MOICC agencies, as well as persons and organizations working with them, for the most part already tend to see themselves as part of an operating network wherein occupational information is exchanged. Most persons interviewed pride themselves in their embeddedness in multiple relationships as the hallmark of their responsiveness to social problems and their desire to cooperate with other agencies. Thus, there presently exists the minimal willingness to operate in a climate of cooperation necessary for the further development of the Minnesota Occupational Information System as a network.

However, although the persons in the Minnesota network already engage in systematic informal communication, if the network is to provide a dynamic means through which better occupational information can be distributed to users and the sharing of occupational information fostered, the present climate of cooperation must be improved, the present data bases made more responsive to user needs, and the present distribution systems in all the agencies better articulated to the user categories, especially those sections of distribution lists which guide dissemination of information to persons in other agencies.

RECOMMENDATIONS

1) Improve the present climate of cooperation in Minnesota by conducting informal seminars to teach network members to recognize each other as resources. There should also be active encouragement by agency heads for persons in their agencies to develop cross-agency informal contacts with others who have something to share and exchange. Occasionally communication problems between agencies have been attributed to differences in terminology, etc. However as research has pointed out, while such persons may begin by communicating differently, over time they can either become more like each other communicatively, or they can stop evaluating their communcation differences negatively (McDermott & Roth, 1978:332). If they do not, the communication differences can continue to be used as a justification for not cooperating or as yardsticks to measure differences between agencies. In

either case, the choice is a conscious one on the part of the persons involved. Patience and motivation to cooperate appear to be keys to the development of cooperation.

2) The system for the distribution of occupational information between agencies should be articulated more to the user categories. The network research interviews indicate that some users are unaware of the availability of some types of occupational information despite the presence of adequate distribution systems. But the present distribution systems are not responsive to user categories, and in some cases information is going to individuals who have no interest in it, or can't use it, and not going to those persons who might find it useful. Of course the answer is not to send everything to everybody in the network. That would be an impractical waste of scarce resources and would contribute to information overload in the network. Although producers in at least three agencies already have available catalogs of information they produce, such source lists are either unknown to a majority of users or can be classified in the same category as a dictionary -- you can't find out where to get information you want unless you already have a very good idea of where it might be. The MOICC publication NEWSNET publishes bi-monthly annotated lists of new information which users find very useful to them as NEWSNET includes material from all the MOICC agency producers. It is a specific recommendation that this idea be developed and expanded. In addition, the way agency distribution lists are presently organized there is no way to gear distribution to a specific user category, thus it is impossible to adequately discriminate distribution to reach only a specific user group. Such ability would be valuable if a disseminator wished to send material only to specific user groups and not send it to others which would have no use for it.

3) Formal and/or informal feedback mechansims should be instituted to ensure direct feedback between producers and "grass roots" level users within and across agencies. Attention to feedback not only makes communication effective but is crucial if the data bases and producers are to become more responsive to user needs.

4) The data bases themselves must be improved. Even if the network were to be made a more efficient means to communicate information, eventually it will only be more efficiently sharing what is still inadequate information.

5) Training sessions and/or workshops on the use of occupational information data should be instituted. Training in the innovative use of the present data would be a valuable means through which the users could be more aware of the limitations of the present data as well as aware of how the present data could be more innovatively used.

6) Training should be provided through presentations at interagency advisory or task force group meetings on how producers and users might find their way around the Minnesota Occupational Information Network; where to look for what they might need, who has what and how to get it. Making the various network elements aware of the roles that they play in the production, dissemination, use and sharing of occupational information would assist them in functioning more effectively and efficiently.

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Appendix A

Time Frame for Study

May 4 through June 12, 1981: Background reading on other State Occupational Information Systems and a literature review of network analysis

June 12 through July 2, 1981: Drafting and mailing of letter of introduction to agency heads. Contacting and/or interviewing of agency heads.

June 12 through September 16, 1981: Interviewing intermediaries, program planners, producers and program evaluators.

August 3 through September 16, 1981: Interviewing of counselors involved in career planning and/or placement.

September 16, 1981: MOICC Network Seminar

September 17 through October 23, 1981: Additional literature review and writing of final report.

Appendix B

Interview Question Areas*

General areas of inquiry for all categories of producers and users:

- Informant's level of authority and role/function in organization.
- Informant's regular contacts with others in his/her organization which were required by nature of his/her job. (Formal contacts)
- Informant's regular contacts with others in other State agencies which were required by the nature of his/her job. (Formal contacts)
- Did the informant belong to any professional organizations? Task forces or committees (both within or between organizations? Were informant's purely social contacts with persons he/she worked with or with persons he/she did not work with or come in contact with in the course of his/her job?
- What was the informant's perception of informal communication within the organization? Was it considered possible (or desirable) to "skip" levels of authority? What was the pattern of behavior respective to coffee breaks and/or lunch?
- How is his/her job performance evaluated? By whom? On what basis?

Areas of inquiry for producers:

- What occupational information are they responsible for? What is the source, purpose and form of the data? What might it be used for?
- Where and how is the information compiled from the data distributed?

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*There are general areas of inquiry covered in the interviews. Wording of specific questions varied from informant to informant.

- Did informant use any information gathered by any other producer? What information, and how was it obtained?

Areas of inquiry for intermediaries:

- What kind of decisions does the informant make in the course of performing his/her job? Who is affected by the decisions? How does informant reach decision?

- What occupational informant does informant use? Does it reach him/her directly? What information does the informant obtain by seeking, and where (from whom) is it obtained?

Areas of inquiry for program/curriculum planners or developers and administors:

- To whom is the information and/or his/her organition responsible?

- What kinds of decisions does the informant make in the course of performing his/her job? Who is affected by the decisions? What information does the informant use to reach decision?

- What occupational information does informant use? Does it reach them directly or must it be obtained by seeking? From whom is it obtained?

- What other considerations do they take into account when making a program/curriculum decision?

- What sould the "ideal" occupational information look like?

Areas of inquiry for counselors involved in career planning or placement:

- Who is their "client" group?

- What occupational information do they use to make their guidance/placement decisions?

- What occupational information reaches them directly? What is obtained by seeking? From whom is it obtained?

- What would the "ideal" occupational information look like?